

REMARKS

There remains pending in this application claims 1-14, of which claims 1, 12, 13, and 14 are independent. No claims have been added or cancelled. Claim 14 has been withdrawn from consideration.

In view of the above amendments and the following remarks, favorable reconsideration and allowance of the above application is respectfully sought.

Claim 1 as amended is directed to a sheet material information detecting device for detecting information on a sheet material. The device comprises a sheet material transport unit for transporting a sheet material along a sheet material transport path, an impact applying unit for applying a physical impact sheet in the sheet material transport path, a detecting unit for detecting information corresponding to a force existing after attenuation of the impact applied to the sheet material, the detecting unit including a piezoelectric member, and a positioning unit for positioning the sheet material. The invention is characterized in that when the impact is to be applied, the positioning unit performs positioning of the sheet material such that a distance between the sheet material and the detecting unit opposed to the sheet material is a predetermined value not less than zero.

Claim 12 recites a signal output device comprising an external force applying portion for applying an external force to a sheet material and a signal output portion for outputting a signal upon application of the external force. As recited in claim 12, the invention is characterized in that a displacing member for controlling a position of the sheet material is provided at a position opposed to the external force applying portion with interposition of the sheet material therebetween.

Independent claim 13 is directed to a method of obtaining information on a sheet material and corresponds generally to the invention as recited in claim 1.

Each of independent claims 1, 12 and 13 was rejected under 35 U.S.C. § 102(b) as being anticipated by Hevenor, et al. (U.S. Patent No. 5,555,009). In view of the above amendments and the following remarks, the rejection is respectfully traversed.

Hevenor, et al. relates to a printer in which the thickness and rigidity of a paper sheet are measured by a lever and a spring provided in a transport path of the paper. A pressure between the printing head and the roller platen is adjusted based on the measured value. However, in Hevenor, et al. the application of an external force is static and is not an impact force, as recited in the claims. Moreover, as described in the specification of the present application, and specifically CAM 212 and motor 213, the impact force is a dynamic external force. Hevenor, et al. does not disclose a mechanism for applying a dynamic external force as used in the present invention.

Moreover, Hevenor, et al. discloses the use of a micro-switch, namely an ON-OFF switch, to be used as a detecting unit. Hevenor, et al. is unable and thus does not teach or suggest obtaining a continuous output unit corresponding to an external force by such a micro-switch. Hevenor, et al. neither discloses nor suggests that a continuous output corresponding to an external force is obtained by a detecting unit including a piezoelectric member, as now recited in claim 1.

Applicants respectfully submit that Hevenor, et al. does not disclose the features of the invention as set forth in each of the independent claims of the above application. Indeed, the features of the present invention make it possible to obtain information on a sheet,

such as the kind or model, density, thickness, surface unevenness, change in state, printing state, double-feeding, and residual number of sheet material, and even the presence or absence of the sheet or the overlapping of sheets, with excellent accuracy. Applicants respectfully submit that such features as recited in the independent claims of the present invention are neither taught nor suggested by the applied reference.

For the foregoing reasons, Applicants respectfully submit that each of independent claims 1, 12, and 13 is patentable over the applied art of record.

The remaining claims in the above application are dependent claims which depend either directly or indirectly from claim 1 and are therefore patentable over the art of record for reasons noted above with respect to claim 1. In addition, each recite features of the invention still further distinguishing it from the applied art. Favorable and independent consideration thereof is respectfully sought.

Applicants respectfully submit that all outstanding matters in the above application have been addressed and that this application is in condition for allowance. Favorable reconsideration and early passage to issue of the above application is respectfully sought.

Applicants' undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,

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